

### ABSTRACT

A wavelength locker operates with a reference tunable liquid crystal filter having integrated photodetectors deposited on the front and backside of the liquid crystal cell to track power intensity of the accepted passband signal and its rejected signal complement at a 50% power point where the two signals cross on the side of the filter transmission peak. The tunable filter is tuned by an offset wavelength from the laser wavelength such that 50% power is transmitted through the filter at the center wavelength of the laser. The wavelength locker may be configured with a liquid crystal tunable etalon or a liquid crystal tunable bandpass filter. A method for locking an optical signal to a desired frequency is also included and provides a substantially linear feedback signal computed by dividing the rejected signal power by the accepted signal power and passing it to laser transmitter to enable it to correct for frequency drift. Optional features of the present invention include an integrated thermal sensor and heater and temperature compensation control schemes.